

## GILA RIVER BASIN

### 09471000 SAN PEDRO RIVER AT CHARLESTON, AZ

**LOCATION**--Lat 31°37'33", long 110°10'26", in NE<sub>1/4</sub>NE<sub>1/4</sub> sec. 11, T.21 S., R.21 E., Cochise County, Hydrologic Unit 15050202, in Spanish land grant of San Juan de las Boquillas y Nogales, at downstream side of pier near center of highway bridge, 0.3 mi south of Charleston, 1.5 mi upstream from Charleston damsite, and 9 mi upstream from Babocomari River.

**DRAINAGE AREA**--~1,234 mi<sup>2</sup>, of which 696 mi<sup>2</sup> is in Mexico.

#### WATER-DISCHARGE RECORDS

**PERIOD OF RECORD**--Jan. and Feb. 1904 (gage heights only); Mar. 1904 to Aug. 1906; Nov. 1910 to Dec. 1911 (gage heights only); Sept. 1912 to current year. Monthly discharge only Oct. 1926 to May 1928 and Dec. 1933 to Apr. 1935, published in WSP 1313. Published as "near Lewis Springs" 1910-11, and as "near Fairbank" 1911-26.

**REVISED RECORDS**--WSP 1119: 1939(M); WSP 1213: 1914, 1916(M), 1918(M), 1919, 1920(M), 1922-23(M); WDR AZ-90-1: Drainage area.

**GAGE**--Water-stage recorder. Datum of gage is 3,954.01 ft above sea level. Prior to Dec. 1, 1942, nonrecording gage or water-stage recorder at various sites within 6.5 mi downstream at different datums.

**REMARKS**--Records fair, except for high-flow records and estimated daily discharges, which are poor. Diversions above station, mostly by pumping from ground water, for irrigation of 3,200 acres in 1978, excluding an unknown amount in Mexico. Record shows flow available at Charleston damsite.

**EXTREMES FOR PERIOD OF RECORD**--Maximum discharge, about 98,000 ft<sup>3</sup>/s Sept. 28, 1926, gage height, 21.9 ft, site and datum then in use, by slope-area measurement of peak flow; minimum daily discharge since 1928, 0.05 ft<sup>3</sup>/s June 14-16, 1994, gage height, 2.02 ft.

**EXTREMES FOR CURRENT YEAR**--Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and (or) maximum (\*):

	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
	July 25.....	2030	*2,950	*6.77

Minimum daily discharge, 0.43 ft<sup>3</sup>/s, July 10.

#### DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	3.6	5.0	5.9	9.0	11	9.7	5.9	2.7	0.63	6.6	13
2	2.0	3.6	5.0	6.1	9.3	11	9.3	5.7	2.4	0.64	5.2	13
3	2.1	3.7	5.0	6.1	9.6	11	9.1	5.5	2.0	0.57	4.7	11
4	2.2	3.8	4.9	6.1	9.7	11	9.0	5.6	1.8	0.51	4.3	9.5
5	2.2	3.9	5.0	6.3	9.8	11	9.0	5.6	1.7	0.54	4.0	8.7
6	2.1	4.1	4.8	6.6	9.9	11	8.9	5.4	1.5	0.57	3.8	74
7	2.6	4.1	4.8	6.7	9.9	11	8.8	5.4	1.5	0.56	4.2	11
8	2.6	4.3	4.8	6.8	10	11	8.8	4.9	1.4	0.61	3.7	8.2
9	2.5	4.5	4.8	7.0	10	11	8.7	4.9	1.4	0.61	9.6	12
10	2.3	4.8	4.9	7.2	10	11	8.2	4.9	1.3	0.43	5.4	12
11	2.2	4.6	5.0	7.2	11	11	8.1	4.7	1.2	0.47	4.2	10
12	2.2	4.7	5.0	7.2	11	11	7.9	4.5	1.2	0.69	3.7	7.1
13	2.3	4.8	5.0	7.4	11	11	7.6	4.5	1.2	0.73	200	5.9
14	2.4	4.9	5.0	7.5	11	11	7.4	4.3	1.1	1.0	23	5.2
15	2.4	4.9	5.5	7.5	11	12	7.4	4.2	1.0	1.5	10	4.6
16	2.4	4.7	4.5	7.6	11	11	7.5	4.0	0.98	1.0	7.5	4.3
17	2.4	4.8	4.8	8.0	11	11	7.4	3.8	1.1	0.94	7.7	4.0
18	2.6	4.8	5.0	8.0	11	12	7.3	3.7	1.8	10	9.7	3.6
19	2.8	4.8	5.0	8.0	11	12	7.3	3.6	1.1	3.7	61	3.5
20	2.8	4.7	5.0	8.1	11	12	7.2	3.5	0.92	1.5	42	3.2
21	2.9	4.6	5.1	8.5	11	12	7.2	3.4	0.74	9.7	11	3.2
22	2.8	4.5	5.4	8.5	11	11	7.1	3.3	0.69	2.0	80	3.0
23	2.9	4.5	5.5	8.5	11	11	7.0	3.1	0.65	11	23	3.4
24	3.0	4.5	5.4	8.6	11	11	7.0	3.0	0.60	7.3	9.6	4.5
25	3.0	4.4	5.4	8.7	11	11	6.9	2.7	0.65	190	12	4.0
26	3.1	4.6	5.4	8.5	11	11	6.8	2.6	0.67	117	56	3.7
27	3.2	4.6	5.5	8.5	11	11	6.6	2.5	0.68	109	203	3.4
28	3.5	4.7	5.7	8.6	11	10	6.2	2.4	0.72	11	96	3.0
29	3.6	4.9	5.8	8.8	---	9.9	6.1	2.8	0.74	144	36	2.9
30	3.6	5.0	5.8	9.1	---	9.8	5.9	5.1	0.67	28	20	2.8
31	3.6	---	5.8	8.9	---	9.8	---	3.2	---	8.4	16	---
TOTAL	82.4	134.4	159.6	236.5	295.2	341.5	231.4	128.7	36.11	664.60	982.9	257.7
MEAN	2.66	4.48	5.15	7.63	10.5	11.0	7.71	4.15	1.20	21.4	31.7	8.59
MAX	3.6	5.0	5.8	9.1	11	12	9.7	5.9	2.7	190	203	74
MIN	2.0	3.6	4.5	5.9	9.0	9.8	5.9	2.4	0.60	0.43	3.7	2.8
MED	2.6	4.6	5.0	7.6	11	11	7.4	4.2	1.1	1.0	9.7	4.6
AC-FT	163	267	317	469	586	677	459	255	72	1320	1950	511
CFSM	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.02	0.03	0.01

#### STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904 - 2003, BY WATER YEAR (WY)

MEAN	41.8	18.2	45.9	39.5	27.6	23.9	13.2	8.28	11.7	137	207	79.2
MAX	1087	132	1230	507	217	160	66.5	37.2	167	876	968	1887
(WY)	1978	2001	1915	1979	1915	1915	1905	1917	1925	1921	1954	1926
MIN	2.66	4.48	5.15	5.81	7.18	8.04	3.03	2.42	1.19	0.55	9.97	3.22
(WY)	2003	2003	2003	1999	1923	1999	1913	1918	1990	1997	1962	2002

#### SUMMARY STATISTICS FOR 2002 CALENDAR YEAR FOR 2003 WATER YEAR WATER YEARS 1904 - 2003

ANNUAL TOTAL	3417.68		3551.01									
ANNUAL MEAN	9.36		9.73									
HIGHEST ANNUAL MEAN												
LOWEST ANNUAL MEAN												
HIGHEST DAILY MEAN	216	Aug 6		203	Aug 27		28800	Sep 27	1926			
LOWEST DAILY MEAN	0.81	Jun 25		0.43	Jul 10		0.05	Jul 14	1994			
ANNUAL SEVEN-DAY MINIMUM	0.95	Jun 23		0.54	Jul 5		0.06	Jul 11	1994			
ANNUAL RUNOFF (AC-FT)	6780		7040				39340					
ANNUAL RUNOFF (CFSM)	0.008		0.008				0.044					
10 PERCENT EXCEEDS	16		11				67					
50 PERCENT EXCEEDS	5.0		5.4				13					
90 PERCENT EXCEEDS	1.8		1.4				3.5					

## 09471000 SAN PEDRO RIVER AT CHARLESTON, AZ—CONTINUED

(NATIONAL WATER-QUALITY ASSESSMENT STATION)

## WATER-QUALITY RECORDS

**PERIOD OF RECORD.**--July 1963 to Sept. 1975, Dec. 1986 to Sept. 1993, Feb. 1996 to current year.**PERIOD OF DAILY RECORD.**--**SPECIFIC CONDUCTANCE:** Oct. 1964 to Sept. 1975, Oct. 1996 to Sept. 1998.**WATER TEMPERATURE:** July 1963 to Sept. 1975, Oct. 1996 to Sept. 1998.**SUSPENDED-SEDIMENT DISCHARGE:** July 1963 to Sept. 1975.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	Sample type	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Disolved percent saturation (00301)	pH, water, unfltrd (00400)	Specif. conductance, uS/cm 25 degC (00095)	Temper-ature, air, deg C (00020)	Temper-ature, water, deg C (00010)	Alka-linity, mg/L as CaCO <sub>3</sub> (39086)	Bicar-bonate, mg/L (00453)	Carbon-ate, mg/L (00452)
OCT 18...	1320	9	4.0	660	7.4	94	8.3	521	31.0	19.8	228	265	6
NOV 29...	1405	9	8.1	656	8.8	93	8.4	548	14.5	11.1	242	283	6
DEC 13...	1315	9	10	661	9.6	97	8.3	562	7.0	9.2	240	284	5
JAN 22...	1340	9	17	655	10.2	105	8.4	548	20.5	9.9	230	268	6
FEB 21...	1050	9	27	665	9.8	103	8.3	533	18.5	11.2	231	271	5
APR 18...	1340	9	8.1	657	9.1	125	8.4	496	28.5	23.5	215	246	8
JUN 05...	1355	9	2.3	658	9.0	133	8.4	441	33.0	27.5	182	209	6
JUL 25...	1335	9	1.5	661	8.8	138	8.6	425	31.5	30.9	192	214	10
AUG 25...	1336	7	1.5	--	--	--	8.6	425	--	--	194	220	8
AUG 14...	1330	9	13	662	5.8	86	8.2	397	34.5	28.1	163	193	3
Date			Chlor-ide, mg/L (00940)	Sulfate water, mg/L (00945)	Ammonia + org-N, mg/L (00625)	Nitrite + Ammonia water, mg/L (00608)	Ortho-phosphate, mg/L (00631)	Nitrite water, mg/L (00613)	Phos-phorus, mg/L (00671)	Sus-pended sediment, mg/L (00665)	Sus-pended sediment, mg/L (80154)	Sus-pended sediment, tons/d (80155)	
OCT 18...	9.49	39.5	.14	<.04	<.05	<.008	.02	.037	5	.05			
NOV 29...	10.4	45.0	.14	<.04	<.05	<.008	E.01	.034	9	.20			
DEC 13...	10.5	48.0	.12	<.04	<.05	<.008	E.01	.033	20	.54			
JAN 22...	9.15	48.8	E.10	<.04	<.05	<.008	E.02	.013	9	.41			
FEB 21...	9.42	48.6	.10	<.04	<.05	<.008	<.02	.016	8	.58			
APR 18...	8.64	38.0	.18	<.04	<.05	<.008	E.01	.031	14	.31			
JUN 05...	8.45	24.9	.20	<.04	.13	<.008	E.01	.039	14	.09			
JUL 25...	7.94	20.9	.32	<.04	E.03	<.008	<.02	.067	23	.09			
AUG 25...	7.92	20.1	.29	<.04	<.05	<.008	<.02	.067	25	.10			
AUG 14...	6.33	29.5	.52	<.04	.35	.009	.05	.22	240	8.4			

Remark codes used in this report:

< -- Less than  
E -- Estimated value

**GILA RIVER BASIN**  
**09471000 SAN PEDRO RIVER AT CHARLESTON, AZ—CONTINUED**  
**(NATIONAL WATER-QUALITY ASSESSMENT STATION)**

Water-quality measurements in the following table were made as part of the National Water-Quality Assessment Program. The following analyses are quality-assurance samples processed during the 2002 sampling period and are defined in the introductory text section titled "Water-Quality Control Data."

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	Sample type	pH, water,	Specif. conductance, unfiltrd field, wat std	Temp- perature, wat er, air, units 25 degC	Temp- perature, water, air, water, deg C	Chlor- ide, water, filtrd, mg/L	Sulfate water, water, filtrd, mg/L	org-N, unfiltrd as N	Ammonia water, filtrd, mg/L	Nitrate water, filtrd, mg/L	Nitrite water, filtrd, mg/L	Ortho- phosphate, water, mg/L
			(00400)	(00095)	(00020)	(00010)	(00940)	(00945)	(00625)	(00608)	(00631)	(00613)	(00671)
JUN 05...	1230	2	5.7	1	34.0	31.5	<.30	<.1	<.10	<.04	<.05	<.008	<.02

Phos-  
phorus,  
water,  
Date unfiltrd  
mg/L  
(00665)

JUN 05... <.004

Remark codes used in this report:  
 < -- Less than

## 09471000 SAN PEDRO RIVER AT CHARLESTON, AZ—CONTINUED

## (NATIONAL WATER-QUALITY ASSESSMENT STATION)

**PERIOD OF RECORD:**--July 1963 to Sept. 1975, Dec. 1986 to Sept. 1993, Feb. 1996 to current year.

**PERIOD OF DAILY RECORD:**--

**SPECIFIC CONDUCTANCE:** Oct. 1964 to Sept. 1975, Oct. 1996 to Sept. 1998.

**WATER TEMPERATURE:** July 1963 to Sept. 1975, Oct. 1996 to Sept. 1998.

**SUSPENDED-SEDIMENT DISCHARGE:** July 1963 to Sept. 1975.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sample type	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Disolved oxygen, percent of saturation (00301)	Disolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf us/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Bicarbonate, wat flt incrm. titr., mg/L (00453)	Carbonate, wat flt incrm. titr., mg/L (00452)
OCT 23...	1350	9	3.0	659	7.6	96	8.3	466	22.0	19.6	208	246	4	
NOV 29...	1245	9	5.0	665	7.9	86	8.2	477	17.0	12.6	223	266	3	
JAN 08...	1355	9	6.9	663	9.6	108	8.5	480	18.5	14.5	223	260	6	
FEB 04...	1425	9	9.7	659	9.8	109	8.5	498	21.5	13.3	220	250	9	
26...	1305	9	11	657	9.2	107	8.5	496	14.0	15.0	204	240	5	
APR 16...	1315	9	7.6	661	9.0	115	8.5	492	25.0	20.5	214	250	5	
JUL 01...	1255	9	.59	660	8.4	129	8.4	448	35.0	29.9	201	236	4	
30...	1610	9	14	661	6.0	82	8.1	234	28.5	23.6	108	132	<1	
SEP 05...	1300	9	8.7	662	7.0	104	8.4	444	32.5	28.4	197	226	7	
05...	1301	7	8.7	--	--	--	8.4	444	--	--	200	223	10	
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Date			Chloride, mg/L (00940)	Sulfate water, mg/L (00945)	Ammonia + org-N, mg/L (00625)	Nitrite + Ammonia water, mg/L (00608)	Nitrite water, mg/L (00631)	Orthophosphate, mg/L (00671)	Suspended phosphorus, mg/L (00665)	Suspended sediment concentration, mg/L (80154)	Suspended sediment load, tons/d (80155)			
OCT 23...	7.32	21.4	.13	<.015	<.022	<.002	<.002	.018	.045	9	.07			
NOV 29...	7.55	21.6	.12	E.04	<.06	<.008	<.008	<.02	.035	9	.12			
JAN 08...	7.51	27.1	.10	<.04	<.06	<.008	<.008	<.02	.023	20	.37			
FEB 04...	7.60	33.0	E.08	<.04	<.06	<.008	<.008	<.02	.021	14	.37			
26...	8.81	34.4	.10	<.04	<.06	<.008	<.008	<.02	.025	8	.24			
APR 16...	8.53	29.4	.10	<.04	<.06	<.008	E.01	.025	8	.16				
JUL 01...	7.73	20.4	.16	<.04	<.06	<.008	E.02	.040	11	.02				
30...	2.83	14.4	3.8	E.03	.78	.067	.10	1.76	1880	69				
SEP 05...	7.29	19.9	.34	<.41d	<.06	<.008	<.18d	.103	32	.75				
05...	7.30	19.9	.39	<.41d	<.06	<.008	<.36d	.103	37	.87				

Remark codes used in this report:

< -- Less than  
E -- Estimated value

Value qualifier codes used in this report:

d -- Diluted sample: method hi range exceeded

**GILA RIVER BASIN**  
**09471000 SAN PEDRO RIVER AT CHARLESTON, AZ—CONTINUED**  
**(NATIONAL WATER-QUALITY ASSESSMENT STATION)**

Water-quality measurements in the following table were made as part of the National Water-Quality Assessment Program. The following analyses are quality-assurance samples processed during the 2002 sampling period and are defined in the introductory text section titled "Water-Quality Control Data."

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sample type	pH, water, unfltrd	Specif. conduc-	Temper- field, wat unf	Temper- ature, air,	Temper- ature, water,	Chlor-	Sulfate	Ammonia +	Nitrite +	Ortho-		
			std units	uS/cm 25 degC				ide, water, filtrd,	water, filtrd,	org-N, mg/L as N	Ammonia water, filtrd, mg/L as N	Nitrite water, filtrd, mg/L as N	phate, water, filtrd, mg/L as P	
JUL	30...	1425	2	5.7	1	32.5	29.6	<.20	<.2	<.10	<.04	<.06	<.008	<.02

Phos-  
phorus,  
water,  
unfltrd  
mg/L  
(00665)

JUL  
30... E.002

Remark codes used in this report:  
< -- Less than  
E -- Estimated value